FACT SHEET FOR NPDES PERMIT NO. WA-005047-4

COMMUNITY OF VANTAGE WASTEWATER TREATMENT PLANT

Kittitas County Water District #6

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to comments. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Kittitas County Water District #6 Community of Vantage PO Box 71 Vantage, WA 98950
Facility Name and Address	Vantage Wastewater Treatment Plant 120 Holiday Avenue Vantage, WA 98950
Type of Treatment:	Complete mix activated sludge, secondary clarification, chlorine disinfection
Discharge Location	Columbia River Latitude: 46° 56' 33" N Longitude: 119° 58' 57" W
Water Body ID Number	WA-CR-1040

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

History

The Community of Vantage is located approximately 26 miles east of Ellensburg next to Interstate 90, immediately west of the Columbia River (see location map in Appendix C). The original wastewater treatment plant was installed in 1966. This original system was an extended aeration package plant rated at 0.005 million gallons per day (mgd) and was privately owned by Stockdale, Inc. After approximately five years of operation, the facility was found to be undersized for the additional influent being received by the flourishing tourist industry associated with the Gingko and Wanapum Sate Parks, as well as the projected additional flows from failing residential septic systems in the area.

In 1972, an engineering report was prepared, proposing regionalization of the wastewater treatment facility. In 1973, the Kittitas County Water District (KCWD) #6 was formed to obtain grants from the USEPA and WDOE to upgrade the wastewater treatment facility. The KCWD #6 assumed ownership of the facility in 1975. In 1978, the facility was completely replaced with a small complete mix activated sludge wastewater treatment plant capable of treating a maximum monthly average flow of 0.087 mgd.

In recent years, flows have increased dramatically during summer weekends. The increased flows are the result of a camper and tourist influx associated with area recreational activities. Most campers appear to be attending concerts at the nearby Gorge at George, Washington. However, in just the last year or so, the Gorge at George has added facilities that may reduce the summer influx at Vantage.

Collection System Status

The collection system consists of approximately 2.0 miles of pipe. The influent to the POTW enters through an 8-inch sewer collection pipe.

Treatment Processes

The POTW uses a complete mix activated sludge process, with diffuse aeration, which provides secondary treatment for the wastewater. The present treatment facilities consist of a headworks with a comminutor, manually-cleaned barscreen, two aeration basins, secondary clarifier, aerobic sludge digester, sludge drying beds, chlorine contact basin, flow meter, outfall line and process control building with a laboratory (see schematic in Appendix C).

The POTW is a Class II facility according to Washington Administrative Code (WAC) 173-230-140, based on the flow, plant type and complexity of the system.

The principal treatment plant operator of this system must be, at least, Group II certified by the State of Washington. Currently the operator spends only two hours per day at the plant, which appears to be insufficient for operations, maintenance, process control, and lab work.

Discharge Outfall

Secondary treated and disinfected effluent is discharged from the facility via an 8-inch concrete pipe into the Columbia River, at River Mile 420.4. The outfall discharges into the river approximately 1,000 feet off-shore and 80 feet below the surface of the water. The position of the outfall, in conjunction with the volume of the receiving water, allows for significant mixing of the POTW effluent.

Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the secondary clarifiers are treated by drying in drying beds and land applied under the Statewide General Permit for Biosolids Management.

PERMIT STATUS

The previous permit for this facility was issued on September 3, 1996. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, Fecal Coliform Bacteria, and Residual Chlorine.

An application for permit renewal was submitted to the Department on October 16, 2000 and accepted by the Department on October 17, 2000.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on August 1, 2000.

During the last permit cycle, which lasted from October 1996 to present, the Permittee has been out of compliance 39 times (see Appendix C for a summary of violations). The Discharge Monitoring Reports (DMRs) have included 14 violations for BOD_5, 13 for Chlorine Residual, 1 for Fecal Coliform, and 11 for TSS. These violations were based on Discharge Monitoring Reports (DMRs) submitted to the Department.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The influent is typical of a dilute sanitary sewage which is not suspected to include inflow or infiltration (I&I). The semi-arid area is rarely prone to storm water events, nor is it prone to high water tables. If there is any problem the system faces, it is from leakage rather than infiltration (October 2000, Facility Plan). The influent is highly variable, depending on the seasons of the year. The summer tourist season (June through September) when concerts occur at the Gorge at George, Washington, is characterized by a significant increase in TSS, and a significant decrease in BOD and pH.

The influent and effluent are characterized as follows:

Table 1: Wastewater Characterization

Influent Parameter	Monthly Averages	Max, Min
BOD_5, mg/L	177	280 (max)
TSS, mg/L	118	200 (max)
Effluent Parameter		
BOD_5, mg/L	20	31 (max)
TSS, mg/L	8.2	38 (max)
pH, Std. Units	---	6.6 (min) – 8.5 (max)
Temp., °C	17.3 (avg. monthly max.)	28 (max)
DO, mg/L	6.4 (overall avg.)	0.74 (min)
Fecal Coliform, col/100 ml	13	170 (max)
Flow, mgd	0.013	0.105 (max)

The POTW facility's effluent has been good, but not outstanding, for a typical complete mix activated sludge facility. When looking at monthly limits, the facility violated BOD concentration 16% of the time, BOD percent removal 10% of the time, chlorine residual 22% of the time, TSS concentration 7% of the time, and TSS removal 12% of the time. The BOD and TSS violations are possibly due to process control problem, e.g., old sludge age.

SEPA COMPLIANCE

There is currently no action or construction requiring SEPA compliance.

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application and DMRs. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are

not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the May 1978 Operation and Maintenance (O&M) manual prepared by Giaudrone & Associates Engineering. The design criteria are as follows:

Table 2: Design Standards for Vantage WWTP

Parameter	Design Quantity
Monthly average flow (max. month)	0.087 mgd
BOD_5 influent loading	175 lb./day
TSS influent loading	175 lb./day
Design population equivalent	615 people

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits

Parameter	Limit

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 ml Weekly Geometric Mean = 400 organisms/100 ml
BOD_5 and TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L; or - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

The existing permit has a chlorine limit of 0.5 mg/L. The facility has at times had trouble meeting the total residual chlorine limit. Most of the recent exceedances have only been tenths of a mg/L above the criterion. There have been problems with the present chlorine-gas disinfection system in reliably maintaining a residual chlorine level below limits and still achieve disinfection.

The Permittee has proposed in its wastewater facilities plan (2000, Kittitas County) to upgrade the disinfection system by replacing the existing chlorination or upgrading the current system with ultraviolet (UV) disinfection. The system needs to be fixed, but no option has been chosen. No date has been set for this upgrade. The proposed permit includes the 0.5 mg/L total residual chlorine as an interim limit until the proposed UV comes on line. The Permittee will not need to monitor for residual chlorine when UV disinfection is implemented, unless the Permittee temporarily uses the chlorine disinfection system. If chlorine is used after implementation of the UV disinfection system, a limit of 0.5 mg/L total residual chlorine will remain.

The following technology-based mass limits for BOD and TSS are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (0.087 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) =

mass limit 22 lbs./day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading (22 lbs/day) = 33 lbs/day.

The total chlorine residual mass limit is calculated as 0.087 mgd (design flow) x 0.5 mg/L (interim limit) x 8.34 (conversion factor) = 0.36 lbs/day (interim limit).

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

Numerical Criteria for the Protection of Human Health

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

Antidegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and has determined that ambient water quality of the Columbia River in the vicinity of the outfall meets all of the designated classification criteria given in Chapter 173-201A WAC, except for total dissolved gases and temperature. In the proposed permit, the Department will use the appropriate designated classification criteria (Class A) for this water body. The discharges authorized by the proposed permit should not cause a degradation of existing water quality or beneficial uses.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

Critical Conditions

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100. Dilution factors are discussed further under surface water quality criteria.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Description of the Receiving Water

The facility discharges to the Columbia River, which is designated as a Class A receiving water in the vicinity of the outfall. There are no other point source outfalls within a mile of Vantage outfall. There are no known significant non-point sources of pollutants nearby. Characteristic uses include the following:

> Water quality of this class shall meet or exceed the requirements for all or substantially all uses. There are 303(d) listings for total dissolved gas and temperature.

Surface Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 ml maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	20 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls, which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of a simple mixing model. The dilution factors have been determined to be:

	Acute	Chronic
Aquatic Life	6,683	66,816
Human Health, Carcinogen		66,816
Human Health, Non-carcinogen		66,816

The critical time period for dilution would be during to 7Q10 flow (lowest seven-day average river flow with a recurrence interval of ten years). The 7Q10 flow was compared with ambient river conditions taken at the Vernita Bridge from 1993-1997 and effluent data from the Vantage DMRs from January 1998 – June 2000.

Flow data was obtained from the USGS records for the Columbia River below Priest Rapids which shows a historical record 7Q10 low flow of 38,012 cfs. However, the Department of Ecology set an instream flow in WAC 173-563-040(3) of 36,000 cfs.

A low flow of 36,000 cfs was used in the following simple mixing equation for chronic dilution.

Chronic DF = (Qe + Qa*0.25)/Qe where Qe is the effluent maximum monthly flow and Qa is the ambient stream flow of the Columbia. A mixing zone is only allowed to use 25% of the river flow.

Chronic DF = (0.1347 cfs + 36,000 x 0.25)/0.1347 = 66,816.

Acute DF = (0.1347 cfs + 36,000 x 0.025)/0.1347 = 6,683.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Columbia River and Vantage POTW effluent is the Summer low flow when temperature in the effluent an ambient waters is highest and other toxins are most concentrated. The ambient background data used for this permit was obtained from The Department of Ecology's environmental monitoring data internet-site which may be found at: http://www.ecy.wa.gov/programs/eap/fw_riv/data/rv36a070.html.

The nearest ambient river station was located at the Vernita Bridge downstream of the Vantage discharge. Hardness and Alkalinity values were taken from the 1996 fact sheet. The values shown for the ambient river conditions represent 90th percentile values except for the dissolved oxygen which is a 10th percentile value. The effluent values are maximum values except as otherwise noted.

Parameter	Ambient Water	Effluent
7Q10 low flow	36,000 cfs	0.1347 cfs
Depth	--	81 feet (outfall depth)
Temperature	18.18° C	28^{o} C
pH	7.9-8.4 (10th-90th percentiles) std. units	6.6 – 8.5 std. units
Dissolved Oxygen	9.67 mg/L (10th percentile)	0.74 mg/L (min.)
Total Ammonia-N	.011 mg/L	N/A*
Fecal Coliform	9.5 col/100 ml	170 col/100 ml
Alkalinity, m	74 mg/L as CaCO3	N/A
Hardness	66 mg/L as CaCO3	N/A

* N/A means data not available

There are 303(d) listings for this section of the river for total dissolved gas and temperature. The POTW does not contribute to these parameters. The Columbia River is listed for temperature, however, this area may not be affected. When a TMDL is conducted, sources and loads of temperature will be determined.

BOD_5--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 18.18 ^{o}C and the effluent temperature is 28 ^{o}C. The predicted resultant temperature at the boundary of the chronic mixing zone is 18.1801^{o}C and the incremental rise is 0.0001^{o}C.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--The impact of pH was modeled using the calculations from EPA, 1988. The input variables included were: a dilution factor of 66,816, upstream temperature of 18.18^{o}C, upstream pH of 7.9 to 8.4 standard units, upstream alkalinity of 74 (as mg $CaCO_3$/L), effluent temperature of 26^{o}C, effluent pH of 6.6, effluent pH of 8.5, and effluent alkalinity was unknown so a range of values were used from 74 to 150 (as mg $CaCO_3$/L).

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitations for pH was placed in the permit and temperature was not limited.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 66,816.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

There were no toxics determined to be present in the discharge at concentrations large enough to have a reasonable potential, under "critical" conditions, to cause violations of the State's water quality standards. However, some parameters, e.g., ammonia, were not monitored in the last permit cycle. Ammonia monitoring will be required in the new permit Vantage has only 80 residential connections at the present time, and no industry that would produce toxic chemicals other than those listed above. Therefore, no water quality-based effluent limits for toxics were derived.

The technology-based limit will be used for total residual chlorine. Because of the large dilution factor, the technology-based limit is the most stringent and therefore will be used. The technology-based total residual chlorine limit of 0.5 mg/L will be placed into the proposed permit until the UV disinfection system comes on-line.

Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to

the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

Sediment Quality

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100). This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for activated sludge facilities.

LAB ACCREDITATION

With the exception of certain parameters, the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is accredited for

General Chemistry which includes the BOD, TSS, pH, Fecal Coliform Bacteria, and Total Residual Chlorine required under the permit.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The *Wastewater Facility Plan for Kittitas County Water District #6, for Vantage Washington, October 2000* has several recommendations for improving operations and maintenance of the system. Some of the recommendations require upgrades to the system and then changes in operations. Process Control procedures should be incorporated in the O&M manual immediately, e.g., collecting MLSS samples and determining sludge volume. As changes are made to the operations and maintenance of the system, changes must be reflected in the O&M manual. Yearly reports of process control sampling data will be required to be sent to the Department of Ecology.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to handle, store and dispose of all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is covered under the Statewide General Permit.

PRETREATMENT

To prevent potential pass-through and interference problems with the POTW, the Permittee is required in Condition S6.E. to complete, submit and adopt or update a Sewer Use Ordinance which shall contain specific and general prohibitions in accordance with 40 CFR Part 403 and WAC 173-216-060.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

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APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 18, and July 25, 2000 in the Ellensburg Daily Record to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department published a Public Notice of Draft (PNOD) on July 11, 2001 in the Ellensburg Daily Record to inform the public that a draft permit and fact sheet were available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, contact Eric Schlorff at 360/407-6554 , or by writing to the address listed above.

This permit and fact sheet were written by **Eric Schlorff.**

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the-State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http.www:wa.gov.ecology.

Summary of DMR Violation

PARAMETER	TYPE	UNITS	VALUE	MIN LIMIT	MAX LIMIT	DATE
BOD, 5-DAY (20 DEG. C)	AVG	MG/L	31		30	1-Mar-00
BOD, 5-DAY (20 DEG. C)	AVG	MG/L	31		30	1-Jul-99
BOD, 5-DAY (20 DEG. C)	AVG	LBS/DAY	33		22	1-Sep-98
BOD, 5-DAY (20 DEG. C)	AVG	LBS/DAY	49			1-Aug-97
BOD, 5-DAY (20 DEG. C)	MAX	LBS/DAY	95			1-Aug-97
BOD, 5-DAY (20 DEG. C)	AVG	LBS/DAY	38			1-Jul-97
BOD, 5-DAY (20 DEG. C)	MAX	LBS/DAY	59			1-Jul-97
BOD, 5-DAY (20 DEG. C)	MAX	LBS/DAY	35			1-Jun-97
BOD, 5-DAY PERCENT REMOVAL	AVG	PERCENT	83	85		1-Mar-00
BOD, 5-DAY PERCENT REMOVAL	AVG	PERCENT	81	85		1-Feb-00
BOD, 5-DAY PERCENT REMOVAL	AVG	PERCENT	84	85		1-Jul-99
BOD, 5-DAY PERCENT REMOVAL	AVG	PERCENT	84	85		1-Sep-98
BOD, 5-DAY PERCENT REMOVAL	AVG	PERCENT	84	85		1-Aug-98
BOD, 5-DAY PERCENT REMOVAL	AVG	PERCENT	83	85		1-Dec-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.51		0.5	1-Feb-01
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	50		0.5	1-Aug-99
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.51		0.5	1-Feb-99
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.51		0.5	1-Aug-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.52		0.5	1-Jul-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.66		0.5	1-Jun-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.77		0.5	1-May-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	1.02		0.5	1-Apr-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.94		0.5	1-Mar-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.89		0.5	1-Feb-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.82		0.5	1-Jan-97
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.81		0.5	1-Dec-96
CHLORINE, TOTAL RESIDUAL	MXD	MG/L	0.65		0.5	1-Nov-96
COLIFORM, FECAL	GM7	#/100 ML	Not reported		400	1-Nov-96
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	82	85		1-Jan-98
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	72	85		1-Oct-97
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	84	85		1-Jun-97
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	82	85		1-Apr-97
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	77	85		1-Mar-97

PARAMETER	TYPE	UNITS	VALUE	MIN LIMIT	MAX LIMIT	DATE
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	77	85		1-Feb-97
SOLIDS, SUSPENDED, % REMOVAL	AVG	PERCENT	82	85		1-Dec-96
SOLIDS, TOTAL SUSPENDED	AVG	MG/L	38		30	1-Feb-00
SOLIDS, TOTAL SUSPENDED	MAX	LBS/DAY	53			1-Sep-97
SOLIDS, TOTAL SUSPENDED	AVG	LBS/DAY	39			1-Aug-97
SOLIDS, TOTAL SUSPENDED	MAX	LBS/DAY	86			1-Aug-97

APPENDIX D--RESPONSE TO COMMENTS

No comments were received by the Department.